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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,127	03/11/2004	Raymond Jay Barry	2002-0549.02/4670-227	8797

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ATT: JOHN J. McARDLE, JR.
LEXMARK INTERNATIONAL, INC.
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EXAMINER

FERGUSON, MARISSA L

ART UNIT PAPER NUMBER

2854

DATE MAILED: 08/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/798,127

Applicant(s)

BARRY ET AL.

Examiner

Marissa L. Ferguson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-25 and 34-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-25, 34-37 and 39-48 is/are rejected.
- 7) ☒ Claim(s) 38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 34-40 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In lines 5 and 6, the applicant claims, "directing said optical energy through at least two distinct locations along said media path", the limitation is not presented in the specification.

The examiner does not know what two distinct locations is the applicant referring to.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9,10,13-16,18,19,21-23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Borton et al. (US Patent 5,751,443).

Regarding claims 9 and 13, Borton et al. teaches an optical source (80), an optical detector (82) disposed in a spaced relationship with an optical source, wherein a source and a detector both disposed on a first side of a media path (Figures 2 and 3), an optical barrier (shield area between 80 and 82) disposed between an optical source and an optical detector (Column 5, Lines 49-51) and at least one reflective surface (86) disposed on a second side of a media path, a reflective surfaces positioned to reflect optical energy from an optical source to an optical detector (Figures 2 and 3) and wherein the sensor is operative to distinguish between no media, opaque media, and transparent media in a media path by detecting a level of optical energy in the case of transparent media that is between that in cases of opaque media and no media present (Abstract and Column 5, Lines 40-44).

Regarding claim 10, Borton et al. teaches wherein a readily detectable amount or optical energy from a source reaches a detector when no media is present in a media path, little or no optical energy from a source reaches a detector when opaque media is present in a media path, and a level of optical energy from a source between the cases of opaque media and no media reaches a detector when transparent media is present in a media path (Column 5, Lines 46-58).

Regarding claim 14, Borton et al. teaches a sensor body and wherein an optical source, an optical detector, and an optical barrier are disposed in a sensor body (element 78 and Figures 2 and 3).

Regarding claim 15, Borton et al. teaches wherein an optical source and an optical detector are disposed at acute, non-zero angles from a direction normal to said media path (Figures 2,3 and Column 5, Lines 44-46).

Regarding claim 16, Borton et al. teaches wherein an optical source and an optical detector are disposed at substantially the same angle with respect to a direction normal to a media path (Figures 2 and 3).

Regarding claim 18, Borton et al. teaches wherein a sensor body is disposed at an acute angle from a direction normal to the plane of a media path (Figures 2,3 and Column 5, Lines 44-46)..

Regarding claim 19, Borton et al. teaches wherein optical energy from an optical source to an optical detector is reflected once in the case of no media or transparent media in a media path (Column 5, Lines 51-55).

Regarding claims 21 and 22, Borton et al. teaches wherein an optical energy is infrared (Column 5, Lines 40-41 [LED's submit infrared light]).

Regarding claim 23, Borton et al. teaches wherein an optical source is selected from the group including a phototransistor and a photodiode (Column 5, Lines 41-42).

Regarding claim 25, Borton et al. teaches wherein an optical source disposed at an angle with respect to a direction normal to a media path in the range from about 5 degrees to about 40 degrees (Column 6, Lines 55-56, Claim 5).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Borton et al (US Patent 5,751,443).

Borton et al. teaches all that is claimed except for optical energy received by an optical detector when transparent media is present in said media path is about 80% of the optical energy received when no media is present. However, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ (CCPA 1980). It would have been obvious to have 80% optical energy, since such modification would result in determining what type of media is present so that the device can properly adjust settings for the paper type specified.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Borton et al (US Patent 5,751,443) in view of Kuchek (US Patent 4,685,982).

Borton et al. teaches the invention claimed with the exception of a sensor that is operative to separately detect a leading edge and a trailing edge of a media sheet. Kuchek teaches an apparatus for sensing different light transmission of label strips that discloses a sensor detecting a leading and trailing edge (Column 3, Lines 1-14). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention as taught by Borton et al. to include a sensor that detects a leading and trailing edge as taught by Kuchek, since Kuchek

teaches that it is advantageous to prevent misorientation of the light-detecting means and a light source.

5. Claims 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borton et al (US Patent 5,751,443) in view of Miner et al. (US Patent 4,540,887).

Borton et al. teaches the invention claimed with the exception of wherein an optical source and an optical detector are disposed at substantially opposite angles with respect to a direction normal to a media path and wherein optical energy from an optical source to an optical detector is reflected twice in the case of no media or transparent media in a media path. Miner et al. teaches a sensor with a light source (12) opposite a detector (20) and wherein energy is reflected twice with respect to the source and detector (light is reflected from light source 12 to detector 22 and light is reflected from light source(12) to detector (16) and Column 2, Lines 45-52).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention as taught by Ross et al. to replace the locations of the detector/source with a source/detector at opposite angles and twice reflected light as taught by Miner et al., since Miner et al. teaches that it is advantageous to provide a simple structure without need for the adjustment of light sources and detectors.

6. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Borton et al (US Patent 5,751,443) in view of Barbera et al. (US Patent 6,364,556).

Borton et al. teaches the invention with the exception of at least one reflective surface disposed on a second side of a media path that is integral to a media guide

comprising a media path. Barbera et al. teaches a print medium detection with a reflected surface integral with a media guide (Figure 3). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention as taught by Ross et al. to include a reflective surface integral with a guide as taught by Barbera et al., since Barbera et al. teaches that it is advantageous to provide a simple and less expensive structure.

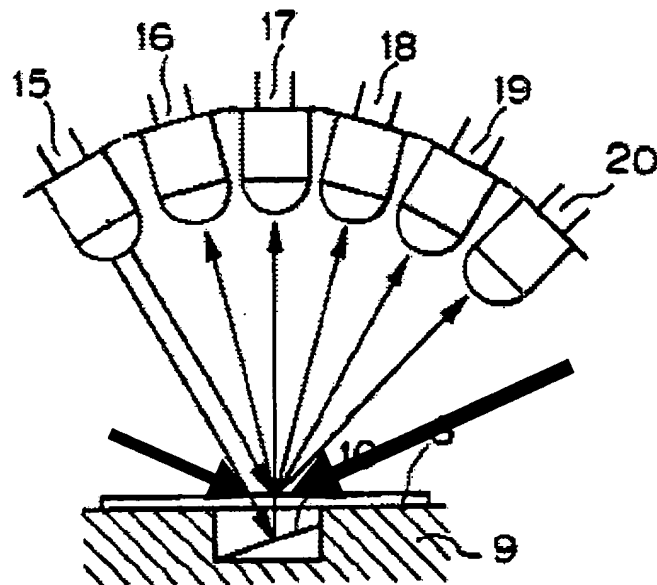
7. Claims 34-37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miner et al. (US Patent 4,540,887) in view of Hashimoto (US Patent 5,764,251).

Regarding claims 34,36 and 39, Miner et al. teaches an invention and method comprising an optical source (12), an optical detector (16) such that an optical path from a source to a detector passes through the plane of a media path (Figures 1 and 3) and wherein a sensor is operative to distinguish between no media, opaque media, and transparent media in a media path by detecting a level of optical energy in the case of transparent media that is between that in cases of opaque media and no media present (Column 2, Lines 24-38 and Column 1, Lines 57-61). However, he does not explicitly disclose directing optical energy through at least two distinct locations along a media path and reflecting the energy off at least two reflective surfaces.

Hashimoto teaches a discriminating device that teaches directing a light from a source (element 15, light would correspond as optical energy) that passes through two locations (two arrows shown on figure below denote the two locations) along a media path and reflecting the light off the two reflective surfaces (6,10). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to

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modify the invention as taught by Miner et al. to include directing and reflecting optical energy as taught by Hashimoto, to provide a measuring coefficient function in order to identify the kind of recording medium present.



Regarding claims 35 and 37, Miner et al. teaches an invention and method wherein a readily detectable amount of optical energy from a source reaches a detector when no media is present in a media path, little or no optical energy from a source reaches a detector when opaque media is present in a media path, and a level of optical energy from a source between the cases of opaque media and no media

reaches a detector when transparent media is present in a media path (Column 2, Lines 24-38).

8. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miner et al. (US Patent 4,540,887) in view of Hashimoto (US Patent 5,764,251) as applied to claim 34 above, and further in view of Barbera et al. (US Patent 6,364,556).

Miner et al. and Hashimoto both teach the invention and method claimed with the exception of determining the length of a media sheet by measuring the elapsed time between sensing the leading edge of a media sheet and sensing the trailing edge of a media sheet, and multiplying the elapsed time by a known speed of a media sheet. Barbera et al. teaches a method detection that determines the length of the path (Column 5, Lines 38-67 and Column 6, Lines 1-13).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention as taught by Miner et al. to include a method of determining length as taught by Barbera et al., since Barbera et al. teaches that it is advantageous to improve media edge detection in a print media transport path.

9. Claims 41, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable by Allen et al. (US Patent 6,291,829) in view of Hashimoto (US Patent 5,764,251).

Regarding claim 41, Allen et al. teaches an optical source (12,14,16) emitting light, an optical detector (22) disposed to receive a light and outputting a signal proportionate to an energy level of a received light, wherein the path of a light from a source to a detector crosses a media path (Figure 1) and wherein an output signal

indicates opaque media in a media path by a first output level, an output signal

indicates no media in a media path by a second output level, and an output signal

indicates transparent media in a media path by an output level intermediate first and second levels (Abstract and Column 1, Lines 65-67 and Column 2, Lines 1-3).

However, he does not explicitly teach at least two reflective surfaces disposed to reflect light emitted by an optical source toward a detector and crosses a media path at least twice.

Hashimoto teaches a discriminating device that teaches directing a light from a source (element 15, light would correspond as optical energy) that crosses media path twice (two arrows shown on figure above denote the two locations), reflecting the light off the two reflective surfaces (6,10) to the detectors (16-20). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention as taught by Miner et al. to include directing and reflecting optical energy as taught by Hashimoto, to provide a measuring coefficient function in order to identify the kind of recording medium present.

10. Regarding claim 42, Allen et al. and Hashimoto both teach all that is claimed except for optical energy received by an optical detector when transparent media is present in said media path is about 80% of the optical energy received when no media is present. However, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. ***In re Boesch, 617 F.2d 272, 205 USPQ (CCPA 1980).*** It would have been obvious to have 80% optical energy, since

such modification would result in determining what type of media is present so that the device can properly adjust settings for the paper type specified.

Regarding claim 43, Allen et al. teaches wherein said emitted light is infrared (Column 5, Lines 52-55).

Regarding claim 44, Allen et al. teaches wherein an optical source is disposed at an acute, non-zero angle from a direction normal to a media path (element 14 and Figure 1).

11. Claims 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al (US Patent 6,291,829) in view of Hashimoto (US Patent 5,764,251) as applied to claim 41 above, and further in view of McMurtry et al. (US Patent 4,975,571).

Allen et al. teaches the invention claimed with the exception an optical source and detector disposed on one side of a media path, two reflective surfaces disposed on the second side of the path and two reflective surfaces forming a corner cube retro reflector and are disposed at equal, but opposite angles. McMurtry et al. teaches an apparatus that teaches an optical source (714) and detector (720) disposed on the same side, two reflective surfaces (717,718) disposed on the second side (Figure 13) and reflective surfaces forming a corner cube retro reflector (516) and disposed at equal and opposite angles (516). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention as taught by Allen et al. to include a cube retro reflector as taught by McMurtry et al., since McMurtry et al. teaches that it is advantageous to save at the expense of the laser diode.

12. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al (US Patent 6,291,829) in view of Hashimoto (US Patent 5,764,251) as applied to claim 41 above, and further in view of Miner et al. (US Patent 4,540,887).

Allen et al. teaches the invention claimed with the exception of wherein an optical source and an optical detector are disposed at substantially equal, but opposite angles with respect to a direction normal to a media path. Miner et al. teaches a sensor with a light source (12) opposite a detector (20) and wherein energy is reflected twice with respect to the source and detector (light is reflected from light source 12 to detector 22 and light is reflected from light source(12) to detector (16) and Column 2, Lines 45-52).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention as taught by Allen et al. to replace the locations of the detector/source with a source/detector at opposite angles and twice reflected light as taught by Miner et al., since Miner et al. teaches that it is advantageous to provide a simple structure without need for the adjustment of light sources and detectors.

Allowable Subject Matter

13. Claim 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 38, the prior art does not meet or render obvious the steps of directing optical energy from said optical source to said optical detector and detecting and quantifying optical energy from said optical source at said optical detector respectively comprise directing and receiving optical energy at substantially equal, but opposite angles with respect to a direction normal to said media path.

Response to Arguments

15. Applicant's arguments filed 6/13/05 have been fully considered but they are not persuasive. In response to applicant's comments on page 11, Lines 1-5, the Borton reference teaches the same invention according to the figure, the light reflected reaches the detector. In the broadest sense, the recited barrier between the optical source and the detector meets on the housing structure in Borton that separates the detector and the source.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa L. Ferguson whose telephone number is (571) 272-2163. The examiner can normally be reached on (M-T) 6:30am-4:00pm and every other(F) 7:30am-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (571) 272-2168. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Marissa L Ferguson
Examiner
Art Unit 2854



REN YAN
PRIMARY EXAMINER